Remarks

Claims 1-14, 16-33 and 35-42 are pending in this application. The applicant will address the objections and rejections of the Action in the order of the Office Action itself.

Numbered Paragraph 1

To resolve the objection in numbered paragraph 1 of the Office Action to claims 40 and 41, applicant has amended claims 40 and 42 as suggested by the Examiner. In the course of reviewing these claims, applicant also revised claims 39 and 41 for clarity from "three sets of" to read "a set of three".

Numbered Paragraphs 2 and 3

Applicant traverses the rejection of claims 1-5, 8-10, 20-24, 27-29, 39 and 41 under 39 U.S.C. Section 102(b) in view of U.S. Patent 5,521,482 to Lang et al.

Claim 1 requires "said processor being responsive to said set of voltage and current levels to generate said data value representative of said instantaneous three phase power factor", and claim 21 requires "generating said data value representative of said instantaneous three phase power factor in response to said set of voltage and current levels". The word "instantaneous" is defined on page 6 of the Specification to mean "representative of the load the power is being sourced to at a specific point in time".

Lang et al. does not provide an instantaneous three phase power factor. Referencing Figure 4 of Lang et al., Phase to Modulation Block 402 requires a series of measurements over time in order to accomplish modulation. Voltage/Current Phase Difference Block 406 depends on Block 402 and thus requires demodulation over time. Power Factor Phase Block 408 in turn depends upon Block 406 and the phase difference calculated therein. This figure clearly shows that power factor as calculated by Lang et al. requires a series of measurements over time.

The sensing of instantaneous current is further defined in Lang et al. as a function of time (for example, column 3, line 30 and column 3, line 56) as is the sensing of voltage (column 3, line 32 for example) The sensed current and sensed voltage signals are specified to

provide a phase modulated current signal as a function of time and a phase to modulated voltage signal as a function of time for more than one electrical phase (see column 3, line 37-42). See also column 7, line 55; column 8, lines 38-39; column 9, line 25; column 9, lines 32-36; column 10, lines 5-7. Moreover, the disclosures of Lang et al. are also specified in terms of RMS (column 10, line 25 and column 11, line 4), RMS being an average value by definition and not instantaneous. Additionally, Lang et al. does not provide a three phase power factor (see for example Lang et al., column 22, lines 12-15). Therefore, Lang et al. does not disclose an instantaneous three phase power factor. For all of these reasons, claims 1 and 20, and their dependent claims, are submitted to be novel and patentable in view of Lang et al.

Claims 39 and 41 also include the word "instantaneous" and are therefore novel and patentable together with their dependent claims in view of Lang et al. for all the foregoing reasons.

The rejection of claims 2 and 21 are independently traversed inasmuch as Lang et al. does not disclose simultaneous sampling as is required by these claims (see Specification, page 11, lines 16-19 for background). This can be further confirmed in Lang et al. at column 14, lines 65-67 which states that power factor is utilized for each phase as the function of time. Lang et al. clearly states that it measures only a single simultaneous instantaneous current signal and a single instantaneous voltage signal (see Lang et al. at column 22, lines 12-15). Consequently, claims 2 and 21 are submitted to be independently novel and patentable in view of Lang et al.

Claims 13, 16, 32 and 35 are submitted to be independently patentable in view of Lang et al. in view of the concept of generating a set or plurality of instantaneous three phase power factor data values while claims 17 and 36 are submitted to be independently novel and patentable due to the concept of checking if each of the predetermined consecutive number of most recent values is less than or equal to zero. Moreover, claims 18 and 37 are submitted to be independently novel and patentable due to their determination of a momentary power loss condition if each of those data values were less than or equal to zero. Claims 19 and 38 are also submitted to be independently novel and patentable in the concept of temporarily disconnecting the power source line when the momentary power loss is initially detected.

Numbered Paragraphs 4 and 5

With regard to the rejection of claims 6, 7, 11, 12, 25, 26, 30 and 31, in numbered paragraph 4 and 5 in 35 U.S.C. Section 103(a) in view of the proposed combination of Lang et al. and U.S. Patent 5,673,196 to Hoffman et al., these rejections are respectfully traversed on the basis that each claim depends upon a patentable claim as is submitted above and, as was previously submitted above and in applicant's Amendment A, since neither Lang et al. nor Hoffman et al. discloses an instantaneous three phase power factor. Without repeating the information provided in that Amendment A, those instances are again called out and it is submitted that Hoffman et al., like Lang et al., fails to disclose the calculation of an instantaneous power factor and that claims 1 and 20 and their dependent claims are novel and patentable in view of any proposed combination of Lang et al. and Hoffman et al.

With regard to each of the foregoing combinations, there is no reason identified in either Lang et al., or Hoffman et al. to either be combined together or to be modified after such combination to result in the claimed invention. Therefore applicant submits that the claims on file are novel and patentable in view of these references whether taken individually or in combination. Reconsideration and withdrawal of the rejections based on the proposed combinations is requested.

Numbered Paragraph 6

With regard to numbered paragraph 6 of the Office Action wherein claims 13, 14, 16-19, 32, 33 and 35-38 under 35 U.S.C. Section 103(a) in view of the proposed combination of Lang et al., Hoffman et al. and U.S. Patent 5,434,738 to Kurszewski et al., the rejection of these claims is traversed. All the foregoing comments relative to Lang et al. and Hoffman et al. are relevant but are not repeated for the sake of brevity. Additionally, the addition of Kurszewski et al. adds nothing to the calculation of instantaneous power factor inasmuch as Kurszewski et al. is directed to protecting induction motors for momentary power loss. Kurszewski et al. is submitted to be not particularly relevant to the calculation of instantaneous power factor and the combination of Lang et al., Hoffman et al. and Kurszewski et al. fails to disclose or suggest the claimed invention relative to instantaneous power factor. Consequently, these claims are submitted to be novel and patentable in view of the proposed combination.

Numbered Paragraph 7

With regard to numbered paragraph 7 of the Action wherein claims 40-42 stand rejected under 35 U.S.C. Section 103(a) in view of the proposed combination of Lang et al. and U.S. Patent 5,229,713 to Bullock et al., applicant again respectfully traverses this rejection. Claims 40 and 42 are submitted to be independently novel and patentable due to their averaging concept. Applicant disagrees with the Examiner's statement that power factor is determined instantaneously in Bullock et al. based on column 11, lines 13-36. Bullock et al. in column 11, lines 21-22 specifically states that a pulse is provided to a power factor lookup register. This pulse is produced in response to a predetermined consumption of reactive energy by the load (see column 11, lines 4-5). Thus Bullock et al. does not produce an instantaneous power factor and claims 40-42 are submitted to be novel and patentable for these and all the foregoing reasons presented above.

With the foregoing amendments and remarks, applicant believes that each and every issue raised in the Office Action has been fully addressed and requests reconsideration and withdrawal of these rejections. Should applicant have failed to address an issue, the Examiner is requested to contact applicant's representative at the number below.

Respectfully Submitted,

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